

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Withdrawn): A communication system comprising:
a plurality of communication terminals including a first communication terminal to broadcast a route request message to a third communication terminal via a second communication terminal, the second and third communication terminals create a route to the first communication terminal and communication is made between the first and third communication terminals via the created route; and

the second and third communication terminals including:
route creation means for creating a plurality of the routes to the first communication terminal by, upon reception of the route request message and determination that the route request message was not previously received, broadcasting the route request message to each terminal included in the plurality of terminals to duplicatively receive the route request message; and

route management means for storing and managing the plurality of routes created by the route creation means, and

the route management means establishes one of the created routes as a communication route to the first communication terminal and changes the communication route to any of the plurality of routes depending on needs.

Claim 2 (Withdrawn): The communication system according to claim 1,
wherein the route management means specifies a priority for each of the created routes based on a specified criterion and preferentially establishes the route with the high priority as the communication route.

Claim 3 (Withdrawn): A communication terminal device comprising:

transmission means for transmitting a specified message assigned with an intended first communication terminal as transmission destination;

route creation means for duplicatively receiving a response to the message originated from the first communication terminal and transferred via a second communication terminal to create a plurality of routes up to the first communication terminal, the plurality of routes created by, upon reception of the message and determination that the message was not previously received, broadcasting the message to each terminal in communication with the communication terminal device;

route management means for storing the plurality of routes created by the route creation means and establishing one of the plurality of routes as a communication route; and

communication means for communicating with the first communication terminal via the established communication route,

wherein the route management means switches the communication route to any of the plurality of routes depending on needs.

Claim 4 (Withdrawn): The communication terminal device according to claim 3,

wherein the communication means starts communication with the first communication terminal after the route creation means receives the first response and a specified time interval elapses, or after reception of a specified number of the responses from the first communication terminal.

Claim 5 (Withdrawn): The communication terminal device according to claim 3, wherein the route management means specifies a priority for each of the created routes based on a specified criterion and preferentially establishes the route with the high priority as the communication route.

Claim 6 (Withdrawn): The communication terminal device according to claim 3, wherein the route management means lists to manage specified information about the created routes.

Claim 7 (Withdrawn): The communication terminal device according to claim 4, wherein the route management means dynamically changes the criterion depending on a communication situation of the route and reassigns the priority to the created route.

Claim 8 (Withdrawn): The communication terminal device according to claim 3, wherein the route management means deletes a route which belongs to the plurality of created routes and is unused for a specified time period.

Claim 9 (Withdrawn): The communication terminal device according to claim 3, wherein, when the created routes exceed a predetermined maximum value, the route management means successively deletes the routes in a chronological order.

Claim 10 (Withdrawn): A control method for a communication terminal device comprising:

a first step of transmitting a specified message assigned with an intended first communication terminal as transmission destination;

a second step of duplicatively receiving a response to the message originated from the first communication terminal and transferred via a second communication terminal to create a plurality of routes up to the first communication terminal, the plurality of routes created by, upon reception of the message and determination that the message was not previously received, broadcasting the message to each terminal in communication with the communication terminal device; and

a third step of establishing one of the plurality of routes as a communication route and communicating with the first communication terminal via the communication route, wherein the third step switches the communication route to any of the plurality of routes depending on needs.

Claim 11 (Withdrawn): A non-transitory computer readable storage medium on which is recorded a program which, when executed in a processor, directs the processor to perform a process comprising:

a first step of transmitting a specified message assigned with an intended first communication terminal as transmission destination;

a second step of duplicatively receiving a response to the message originated from the first communication terminal and transferred via a second communication terminal to create a plurality of routes up to the first communication terminal, the plurality of routes created by, upon reception of the message and determination that the message was not previously received, broadcasting the message to each terminal in communication with the first communication terminal; and

a third step of establishing one of the plurality of routes as a communication route, communicating with the first communication terminal via the communication route and switching the communication route to any of the plurality of routes depending on needs.

Claim 12 (Withdrawn): A communication terminal device which relays a route request message originated from a first communication terminal to a second communication terminal and creates a route to the first communication terminal based on the route request message, the communication terminal device comprising:

route creation means for creating a plurality of the routes to the first communication terminal by, upon reception of the route request message and determination that the route request message was not received, broadcasting the route request message to each terminal in communication with the communication terminal device to duplicatively receive the route request message; and

route management means for storing and managing the plurality of routes created by the route creation means,

wherein the route management means establishes one of the created routes as a communication route to the first communication terminal and changes the communication route to any of the plurality of routes depending on needs.

Claim 13 (Withdrawn): A control method for a communication terminal device which relays a route request message originated from a first communication terminal to a second communication terminal and creates a route to the first communication terminal based on the message, the control method comprising:

a first step of creating a plurality of the routes to the first communication terminal by, upon reception of the route request message and determination that the route request message was not received, broadcasting the route request message to each terminal in communication with the communication terminal device to duplicatively receive the route request message; and

a second step of storing and managing the plurality of routes, and the second step establishes one of the created routes as a communication route to the first communication terminal and changes the communication route to any of the plurality of routes depending on needs.

Claim 14 (Withdrawn): A communication system comprising:
a plurality of communication terminals, and based on a first message originated from a first communication terminal to a third communication terminal via a second communication terminal and a second message originated from the first communication terminal in response to the first message to the first communication terminal via the second communication terminal, creates routes to the first through third communication terminals by using the first through third communication terminals to communicate between the first and third communication terminals via the created routes,
wherein the first communication terminal has route request transmission means for transmitting a route request composed of a request for the route to be used for the communication with the third communication terminal, and
the second and third communication terminals have:
route creation means for duplicatively receiving the first or second message to create the plurality of routes to the first or third communication terminal, the plurality of routes created by, upon reception of the first or second message and determination that the received first or received second message was not previously received, broadcasting the received first or received second message to each terminal included in the plurality of terminals; and
route establishment means for establishing a communication route between the first and third communication terminals using a route which belongs to the plurality of routes

created by the route creation means and satisfies the route request transmitted from the first communication terminal.

Claim 15 (Withdrawn): The communication system according to claim 14, the route request transmission means for the first communication terminal transmits the route request corresponding to an attribute of data to be transmitted to the third communication terminal according to the communication.

Claim 16 (Withdrawn): The communication system according to claim 14, wherein the third communication terminal has response origination means for originating a response corresponding to the route request when the route request is received; wherein the first communication terminal has route establishment means for establishing the communication route to the third communication terminal using the route satisfying the route request based on the response transmitted from the third communication terminal via the second communication terminal, and the route establishment means for the first through third communication terminals individually establishes the communication route from the first communication terminal to the third communication terminal and the communication route from third communication terminal to the first communication terminal so as to be different from each other based on the route request and the response to the route request.

Claim 17 (Withdrawn): The communication system according to claim 14, wherein route request transmission means for the first communication terminal transmits the route request to update lifetime of the route, and

the route establishment means for the second and third communication terminals update the lifetime for the corresponding route in accordance with the route request.

Claim 18 (Withdrawn): The communication system according to claim 14, wherein, when retransmitting the route request, the route request transmission means for the first communication terminal changes to relieve conditions specified as the route request.

Claim 19 (Withdrawn): A communication terminal device comprising:
transmission means for transmitting a specified first message assigned with an intended first communication terminal as transmission destination;
route creation means for creating a plurality of routes to the first communication terminal by, upon reception of the first message and determination that the first message was not previously received, broadcasting the first message to each terminal in communication with the communication terminal device to duplicatively receive the first message; and
route request transmission means for using the first communication terminal as transmission destination and for transmitting a route request composed of a request for one of the routes to be used for communication with the first communication terminal.

Claim 20 (Withdrawn): The communication terminal device according to claim 19, wherein the route request transmission means transmits the route request corresponding to an attribute of data to be transmitted to the first communication terminal.

Claim 21 (Withdrawn): The communication terminal device according to claim 19, wherein, when retransmitting the route request, the route request transmission means changes to relieve a request for the route.

Claim 22 (Withdrawn): A communication terminal device comprising:
route creation means for duplicatively receiving a first message originated from a first communication terminal or a second message originated from a second communication terminal in response to the first message to create a plurality of routes to the first and second communication terminals, the plurality of routes created by, upon reception of the first or second message and determination that the received first or received second message was not previously received, broadcasting the received first or received second message to each terminal in communication with the communication terminal device; and
route establishment means for establishing a communication route between the first and third communication terminals using the route which belongs to the plurality of routes created by the route creation means and satisfies the route request based on a route request originated from the first communication terminal and composed of a request for the route to be used for communication with the second communication terminal.

Claim 23 (Withdrawn): The communication terminal device according to claim 22, wherein the route establishment means individually establishes the communication route from the first communication terminal to the second communication terminal and the communication route from second communication terminal to the first communication terminal so as to be different from each other based on the route request and a response originated from the second communication terminal in response to the route request.

Claim 24 (Withdrawn): The communication terminal device according to claim 22, wherein the route establishment means updates lifetime of the corresponding route based on the route request.

Claim 25 (Withdrawn): A control method for a communication terminal device, comprising:

a first step of duplicatively receiving a first message originated from a first communication terminal or a second message originated from a second communication terminal in response to the first message to create a plurality of routes to the first and second communication terminals, the plurality of routes created by, upon reception of the first or second message and determination that the received first or received second message was not previously received, broadcasting the received first or received second message to each terminal in communication with the communication terminal device; and

a second step of establishing a communication route between the first and third communication terminals using the route which belongs to the plurality of created routes and satisfies the route request based on a route request originated from the first communication terminal and composed of a request for the route to be used for communication with the second communication terminal.

Claim 26 (Withdrawn): A communication terminal device comprising:
route creation means for duplicatively receiving a first message originated from a first communication terminal to itself as destination to create a plurality of routes to the first communication terminal, the plurality of routes created by, upon reception of the message and determination that the message was not previously received, broadcasting the message to each terminal in communication with the communication terminal device; and

route establishment means for establishing a communication route to the first communication terminal using the route which belongs to the plurality of routes created by the route creation means and satisfies the route request based on a route request originated from the first communication terminal and composed of a request for the route to be used for communication with itself.

Claim 27 (Currently Amended): A communication system comprising:
a plurality of communication terminals, and based on a message originated from a first communication terminal to a third communication terminal via a second communication terminal, each communication terminal included in the plurality of communication terminals creates routes to the first communication terminal by using the second and third communication terminals to communicate between the first and third communication terminals via the created route,

wherein the second communication terminal has state notification means for detecting a possible disconnection state in terms of a disconnection symptom for communication on the route as an upstream side for the message and notifying the possible disconnection state to the first communication terminal, wherein a number of notifications of the possible disconnection state transmitted to the first communication terminal is limited to a specified ratio of one notification to a predetermined number of data packets transmitted between the first and third communication terminals, and

the first communication terminal has message origination means for generating the message using a creation condition according to a route other than the route matching the possible disconnection state notified from the second communication terminal and originating the message.

Claim 28 (Original): The communication system according to claim 27,
wherein the state notification means detects the possible disconnection state based on
at least two different communication criteria.

Claim 29 (Original): The communication system according to claim 27,
wherein the state notification means limits the number of the possible disconnection
states notified to the first communication terminal at a specified ratio.

Claim 30 (Original): The communication system according to claim 27,
wherein the message origination means generates the message using a creating
condition according to the route in a better condition than the possible disconnection state.

Claim 31 (Original): The communication system according to claim 27,
wherein the message origination means measures the number of notifications of the
possible disconnection state notified from the second communication terminal on a unit time
basis and, when a measurement result exceeds a specified number of times, generates the
message using a creation condition according to a route other than the route.

Claim 32 (Original): The communication system according to claim 31,
wherein the message origination means measures the number of notifications of the
possible disconnection state notified from the second communication terminal on a unit time
basis and, when a measurement result exceeds a specified number of times, generates the
message using a creation condition according to a route in a better state than statistical results
of the possible disconnection states corresponding to the number of notifications.

Claim 33 (Currently Amended): A communication terminal device which mediates between a first communication terminal as a transmission origin and a second communication terminal as a transmission destination and based on a message originated from the first communication terminal to the second communication terminal, creates routes to the first communication terminal, the communication terminal device comprising:

a memory to store the routes; and

state notification means for detecting a possible disconnection state in terms of a disconnection symptom for communication on the routes as an upstream side for the message and notifying the possible disconnection state to the first communication terminal, wherein a number of notifications of the possible disconnection state transmitted to the first communication terminal is limited to a specified ratio of one notification to a predetermined number of data packets transmitted between the first and second communication terminals.

Claim 34 (Original): The communication terminal device according to claim 33, wherein the state notification means detects the possible disconnection state based on at least two different communication criteria.

Claim 35 (Previously Presented): The communication terminal device according to claim 33,

wherein the state notification means limits the number of the possible disconnection states notified to the first communication terminal at a specified ratio.

Claim 36 (Currently Amended): A communication method for a communication terminal device which mediates between a first communication terminal as a transmission origin and a second communication terminal as a transmission destination and based on a

message originated from the first communication terminal to the second communication terminal, the communication terminal device creates routes to the first communication terminal, the communication method comprising:

a first step of detecting a possible disconnection state in terms of a disconnection symptom for communication on the routes as an upstream side for the message; and

a second step of notifying the possible disconnection state detected by the first step to the first communication terminal, wherein a number of notifications of the possible disconnection state transmitted to the first communication terminal is limited to a specified ratio of one notification to a predetermined number of data packets transmitted between the first and second communication terminals.

Claim 37 (Currently Amended): A communication terminal device which, based on a message originated from itself to a first communication terminal as a transmission destination, creates routes to itself by means of a second communication terminal mediating between itself and a first communication terminal and communicates with first communication terminal via one of the created routes, the communication terminal device comprising:

a memory to store the routes; and

message origination means for, when the second communication terminal notifies a possible disconnection state in terms of a disconnection symptom for communication on a first route upstream of the message, generating the message using a creation condition according to a second route other than [[the]] a first route matching the possible disconnection state and originating the message, wherein a number of notifications of the possible disconnection state received by the communication terminal device is limited to a

specified ratio of one notification to a predetermined number of data packets transmitted between the communication terminal device and the first communication terminal.

Claim 38 (Previously Presented): The communication terminal device according to claim 37,

wherein the message origination means generates the message using a creating condition according to the second route in a better condition than the possible disconnection state.

Claim 39 (Previously Presented): The communication terminal device according to claim 37,

wherein the message origination means measures the number of notifications of the possible disconnection state notified from the mediating communication terminal on a unit time basis and, when a measurement result exceeds a specified number of times, generates the message using a creation condition according to a third route other than the first route.

Claim 40 (Previously Presented): The communication terminal device according to claim 39,

wherein the message origination means measures the number of notifications of the possible disconnection state notified from the mediating communication terminal on a unit time basis and, when a measurement result exceeds a specified number of times, generates the message using a creation condition according to a fourth route in a better state than statistical results of the possible disconnection states corresponding to the number of notifications.

Claim 41 (Currently Amended): A communication method for a communication terminal device which, based on a message originated from itself to a first communication terminal as a transmission destination, creates routes to itself by means of a second communication terminal mediating between itself and the first communication terminal and communicates with the first communication terminal via one of the created routes, the communication method comprising:

a first step of, when the mediating communication terminal notifies a possible disconnection state in terms of a disconnection symptom for communication on a first route upstream of the message, generating the message using a creation condition according to a second route other than the first route matching the possible disconnection state; and

a second step of originating the message generated by the first step, wherein a number of notifications of the possible disconnection state received by the communication terminal device is limited to a specified ratio of one notification to a predetermined number of data packets transmitted between the communication terminal device and the first communication terminal.

Claim 42 (Currently Amended): A non-transitory computer readable storage medium on which is recorded a program which, when executed in a communication terminal device, directs the communication terminal device to mediate between a first communication terminal as a transmission origin and a second communication terminal as a transmission destination and, based on a message originated from the first communication terminal to the second communication terminal, create routes to the communication terminal as transmission origin, the program comprising:

a first step of detecting a possible disconnection state in terms of a disconnection symptom for communication on a first route as an upstream side for the message; and

a second step of notifying the possible disconnection state detected by the first step to the first communication terminal, wherein a number of notifications of the possible disconnection state transmitted to the first communication terminal is limited to a specified ratio of one notification to a predetermined number of data packets transmitted between the first and second communication terminals.

Claim 43 (Currently Amended): A non-transitory computer readable storage medium on which is recorded a program which, when executed in a communication terminal device, directs the communication terminal device, based on a message originated from itself to a first communication terminal as a transmission destination, to create routes to itself by means of a second communication terminal mediating between itself and the first communication terminal and to communicate with the first communication terminal via one of the created routes, the program comprising:

a first step of, when the mediating communication terminal notifies a possible disconnection state in terms of a disconnection symptom for communication on a first route upstream of the message, generating the message using a creation condition according to a second route other than the first route matching the possible disconnection state; and

a second step of originating the message generated by the first step, wherein a number of notifications of the possible disconnection state transmitted to the first communication terminal is limited to a specified ratio of at least one notification to a predetermined number of data packets transmitted between the communication terminal device and the first communication terminal.